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# The international division of industrial labour and the core-periphery concept

*Kimmo Kiljunen\**

The crisis has helped to increase the Latin American discussion of foreign trade, both as regards the underlying causes of the region's problems in this field and the most suitable policy measures for tackling them. In this context, this article is useful because it gives an overall summary picture of the main theories regarding the division of labour and trade at the world level.

The author begins by presenting the concept of comparative advantages in its different versions—classical Ricardian and neo-classical—together with some of the criteria put forward with a view to overcoming its limitations, such as those relating to factor proportions, product cycles, and stages of industrial growth. He then examines the theories opposing the idea of production specialization based on comparative advantages, particularly List's arguments on protection of infant industries, structuralist theories and their core-periphery concept, and the different forms of the dependency approach.

Towards the end of the paper, the author puts forward his own theories on the interpretation of the international division of industrial labour, based on a redefinition of the concepts used by the proponents of some of the foregoing theories, especially those of a structuralist nature: the role that a country plays in the international division of labour depends on the breadth and depth of its industrialization and, ultimately, its capacity to compete abroad. In shaping these conditions, a decisive role is played by the relative autonomy *vis-à-vis* the exterior as regards inputs and markets, the diversity of the industrial structure, the dispersion of a country's trading partners, the intensive use of skilled labour, and the value added in industrial production.

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Why do people trade? Basically, because it is to their advantage to do so. Different people and different nations possess different production abilities and resources and may want to consume goods in different proportions, and this opens up the possibility of profitable trade.

Progress in production, particularly in industrial production, is gradually reshaping the spatial division of labour, i.e., local, national and international patterns of economic specialization. This has involved changes in the set of goods produced and consumed (WHAT), changes in the process of production (HOW), as well as changes in the geographical distribution of productive capacities and activities (WHERE). These related questions form the foundation upon which both international trade theory and location theory have tried to build.

By definition, industrialization implies a deepening of the social division of labour and diversification of the production structure, which lead to expanding exchange relations. Hence, there are links between industrialization and the expansion of trade, including foreign trade. Overall growth of manufacturing activities has both facilitated and induced more trade.

But what causes a country or a region to specialize in producing particular types of goods? Why does one country buy certain goods from another, and who gains from the exchange?

## I

### The case for comparative advantages

In answer to the question concerning which goods are traded and why they are traded, economists since the time of Adam Smith have sought the answer in terms of international differences in costs of production and respective prices. Adam Smith demonstrated that two countries will gain from a division of labour via specialization and mutual trade when one is more efficient than the other at producing one type of product, but less efficient than its partner at producing another product. Consequently, a country will specialize in those activities in which it has lower absolute unit costs than the trading partner.

It was David Ricardo, though, who proved that there might be a gain through specialization and mutual trade even when one country is better than its partner at producing both products, if its advantage is greater in one product than in the other. This argument was based on the principle of comparative cost advantage, which has subsequently become the cornerstone of international trade theory.

### 1. *The classical approach*

The rational nucleus of the Ricardian principle is that through foreign trade a country may realize some relative advantages even when it has an absolute inferiority to its partners in every branch of production. It is only necessary that the degree of inferiority should be different in the various branches. Hence, in order to optimize gains through international trade, countries should specialize in the export of those products which they can produce at the lowest relative cost. It is this phenomenon of differences in comparative advantage that gives rise to profitable trade even among the most unequal of trading partners.

The principle of comparative advantage, as it evolved during the nineteenth century and became the basis for the conventional theory of international trade, was made to serve two distinct but interrelated purposes. First, it has been used to explain what determines the pattern and the actual flows of international trade. In this regard the theory may be considered to be "positive", in that it aims to explain what actually takes place. In the original Ricardian example, the most important factor affecting the pattern of international trade was the difference in labour time costs, i.e., in labour productivity between countries.

Secondly and more significantly, the theory of comparative advantage has been used to indicate that the international division of labour and the consequent international trade are beneficial. In this respect the theory is used in a "normative" sense as a proof of the advantages of free trade and as an explanation of what constitutes the best pattern of international trade.

Free trade, based on the principle of comparative advantage and promoting the international division of labour, has several major theoretical

advantages. The first is that trade enables all countries to escape from the limitations of their factor endowments and consume commodities in combinations that lie outside the limits of their production possibilities. All countries will benefit, although the gains may be disproportionately distributed. The second implication is that free trade will improve the efficiency of resource allocation and thus maximize output by permitting every country to specialize in what it does best —i.e., by focusing production on those goods in which the country has a comparative advantage. Thirdly, under free trade conditions the benefits of economies of scale may be optimized. Fourthly, there are some gains in efficiency, since competition from abroad encourages more efficient utilization of the factors of production within each firm and industry as well as making markets more efficient by increasing competition. Altogether, according to the theory, international specialization and trade can lead to global output increases for all traded commodities and secure the highest possible degree of economic welfare.

### 2. *The neo-classical approach*

Classical trade theory is based on the notion that differences in comparative real costs determine comparative advantage. The contemporary twentieth century application of the principle of comparative advantage, however, is in terms of opportunity rather than real costs. In this respect the modern version is essentially a simplified form of static neo-classical general equilibrium theory.

With a given factor endowment, a country can produce various combinations of commodities. The optimum pattern of specialization is determined by comparing the opportunity cost of producing a given commodity with the price at which the commodity can be imported or exported. At equilibrium, no commodity is produced that could be imported at a lower cost, and exports are expanded until marginal revenue equals marginal costs. The theory demonstrated that where production possibilities and the consequent opportunity costs differ, countries will gain from freer trade.

But why do production possibilities differ between countries? An explanation for this was

offered by two Swedish economists, Eli Heckscher (1919) and Bertil Ohlin (1935). According to them, differences in factor supplies (labour and capital as well as land and natural resources) between countries are the prerequisite for international specialization and profitable trade. Countries are endowed with different factor supplies; hence, relative factor prices will differ (e.g., labour will be relatively cheap in labour-abundant countries) and so too will domestic commodity price ratios and factor combinations. Since different commodities require production factors in different relative proportions, a country with a relatively good labour supply, for example, has a comparative advantage in the production of commodities which make abundant use of labour. This country tends, therefore, to focus on exports of labour-intensive goods in return for imports of capital-intensive goods from a country with relatively ample supplies of capital. Hence, each country will benefit from international specialization and trade by producing commodities that use more of its relatively abundant factors of production.

The Heckscher-Ohlin theorem, representing the basis of neo-classical trade theory, is an offshoot of the classical (Ricardian) theory of comparative advantage.

Both approaches lead to the same basic conclusion: free trade maximizes global output, with all participating countries sharing in the gains from specialization and trade. By enabling coun-

tries to obtain goods with which they are relatively less endowed at lower world market prices, trade is stimulating overall economic growth. It enlarges a country's consumption capacities and provides access to scarce resources and to worldwide markets.

Furthermore, free trade tends to equalize factor prices among trading nations —e.g., by raising relative wages in labour-abundant countries and lowering them in labour-scarce ones— so that international income inequalities decrease. This tendency towards factor price equalization implies that trade in goods substitutes for factor movements, because in a non-trade situation capital as well as labour would tend to move from areas where it is relatively plentiful to areas where it is relatively scarce. Thus, for example, relative wage rates in labour-abundant countries can rise either because of an increase in the demand for products with a high labour content or because of a movement of labour to a country where it is relatively less abundant. Hence, pure trade theory demonstrates that factor movements and commodity trade are substitutes.

The more mobility the factors are assumed to have between countries —as they are assumed to have within one country— the greater the applicability of industrial location theory in determining the patterns of the international division of labour. As B. Ohlin himself indicated, international trade theory reveals, in fact, one aspect of general location theory that is special only because frontiers are involved.

## II

### Qualification regarding the determination of comparative advantages

The conventional model for international specialization and trade, based on comparative advantage, is a static and simplified one. With its two countries, two commodities, two factors, perfect competition in product and factor markets, international immobility and national mobility of factors, identical production func-

tions and qualitative similarity of production factors between countries, it has been possible to demonstrate that there are advantages to be gained from specialization and free trade. But the required assumptions are too hypothetical and seemingly contrary to the reality of contemporary international economic relations. Hence,

the theory has to be accepted on its plausibility and internal consistency alone. Under the qualifying conditions mentioned, it is able to explain a hypothetical foreign trade structure, but hardly the actual trade patterns observed in the real world. With free trade, far from factor price equalization, there has been a tendency to factor price divergence, and thus international income inequalities have been increasing. Similarly, the theory leads to conclusions about the distribution of benefits from international specialization and free trade that are too simplistic.

The critical elements are particularly evident with regard to the explanation of the international division of industrial labour and the consequent trade patterns in manufactures. In primary products, the most obvious factors that explain international trade are natural resources (land of different quality, mineral deposits, climatic conditions; etc.). No sophisticated theory is required to show that the location of primary production is largely determined by natural factors and that the location of consumption depends largely on income levels. The pattern of international trade in manufactured goods is much more complex and more difficult to explain, because of a variety of options in the location of production. In what follows, the main concern is with the spatial distribution of production and the direction of trade in manufactured goods.

### 1. *New approaches to factor proportions*

The central thesis of the traditional Heckscher-Ohlin factor endowment theory has been questioned by Wassily Leontief (1954, 1956) and his followers. The famous "Leontief's paradox" demonstrated that United States exports have been more labour-intensive than its import-competing sector, despite the fact that the United States has been well endowed with capital and poorly endowed with labour, relative to other countries. Leontief tried to explain the paradox by the fact that the United States labour was three times more productive than foreign labour. He concluded that, although the working population in the United States might appear to be numerically small in relation to the capital stock, the quality of the labour is such that the effective supply is relatively great, i.e., capital is

relatively scarce in relation to the great skill and productivity of labour. Leontief has thus detached labour productivity from the supply of capital in order to support the neo-classical theory.

On the basis of the apparent paradox pointed out by Leontief, several attempts have been made to elaborate a trade theory. The major efforts have focused upon the incorporation of either technology (e.g., measured by R & D activity) or human capital (skilled labour) as additional explanatory factors in models of comparative advantage (Posner, 1961; Hufbauer, 1966; Keesing, 1967 and Vernon, 1970).

In the traditional model, technology and skills are assumed to be stable and universally available. Producers, regardless of their location, are assumed to be familiar with all technological options available, and they choose that technology which best suits their country's factor endowment. This approach, however, ignores technological change as well as differences in innovation and adaptation capabilities between countries.

The so-called "neo-technology" or "technology  $\neq$  P" theories, in contrast, emphasize that inter-country differences in innovative activities have become a critical factor in explaining patterns of international trade, especially as regards the exports of the industrially advanced countries. Leads and lags in technological innovation among countries determine the pattern of their specialization and the composition of their trade. The capacity for technical innovation is considered to be an essential factor in a country's competitiveness. For example, the United States competitive advantage is explainable in terms of a temporary monopoly given by the incorporation of new technology into a product or production process. This process of creating and incorporating the technology is relatively labour-intensive, hence explaining "Leontief's paradox".

The concept of "technological superiority" may include not only product or production technology, but overall "skill-endowment" such as entrepreneurial abilities, scientific capacities, the technical skills of the labour force, marketing skills, etc. In this respect, human capital may be treated as a separate factor of production, distinct from physical capital, in explaining

trade patterns. Altogether, these new approaches to factor proportions retain the structure and methodology of the traditional neo-classical trade models based on factor endowment, though they do suggest the incorporation of one or two additional variables.

## 2. *Product cycle theory*

Explanations of trade flows based on new approaches to factor proportions represent major qualifications to the traditional comparative advantage approach. These new explanations have been further analysed and integrated in the product cycle theory, which attempts to explain the international division of labour and trade patterns in manufactured goods on the basis of stages in a product's life (Vernon, 1966, Hirsch, 1967 and Wells, 1972). The theory proceeds from the premise that products typically pass through Early, Growth and Mature phases during their life cycle. These phases tend to be accompanied by changes in the relative importance of the various factors of production —skilled and unskilled labour, scientific and engineering know-how and capital and management ability. These changes have profound implications for international competitiveness, both in sectoral and spatial terms.

In the early phase of a product cycle, when new products or processes are introduced, the production is characterized by high skill-intensity, and it is the availability of skills which determines the location of manufacturing production.

In the growth phase, mass production and mass distribution are introduced. The product information and production know-how spread rapidly.

Finally, in the mature phase, product specifications are standardized and the production technology is stable and internationally widespread. The relative importance of external economies and of scientific and engineering inputs declines. The location of industry is, hence, more flexible.

The differences between trade models based on the product cycle and the traditional conventional trade theory are manifold. The latter is offered as an all-encompassing model, whereas

the former provides only partial explanations for trade flows in manufactured goods. Being theoretically less elegant, the product cycle approach is, however, more realistic in its basic assumptions. The conventional Heckscher-Ohlin factor proportions theorem is based on free availability of information and technology, perfect markets, and identical production functions and consumption patterns in all countries. The product cycle theory, on the contrary, is based on the assumptions that the flow of information and technology is restricted, particularly in R & D —intensive sectors, and that products undergo predictable changes in their production and marketing characteristics over time. For example, the production function changes with time in such a way that early in the life of the product it is more labour— and skill-intensive than later. Moreover, the production process is characterized by economies of scale, and consumption patterns differ by income levels in different countries.

The product cycle approach emphasizes that it is the skill content of production which primarily determines comparative advantage. The assertion that technology is not universally available and that the capacity for innovation is not equally distributed between countries is apparently quite realistic. High-income countries are better endowed than low-income ones with the factors which facilitate innovation: on the supply side, they have a developed technological infrastructure as well as an abundance of engineers and scientists; and on the demand side, potential markets for high-quality goods which are, in addition, large enough to justify the vast investments necessary to develop new products or technologies. Consequently, high-income countries can be regarded as enjoying a comparative advantage in industries which are characterized by a high rate of innovation and are producing goods in an early stage of their life. On the other hand, low-income countries with low labour costs have an advantage in mature standardized products. The production may even be transferred from high-income to low-income countries via the investments of transnational firms as a product passes through its life cycle. Hence, as the phase of the product life cycle changes, the relative importance of the various

location factors shifts, influencing the spatial distribution of production.

The product cycle theory contributes in two major ways to the analysis of the international division of labour and the consequent trade patterns. On the one hand, it indicates a gradually emerging eclectic view of international trade theory which suggests that there is no single explanation for the pattern of international trade. Different theoretical explanations are required to shed light on different types of trade relations, with respect to products or trading partners or both. The product cycle theory, in fact, accepts the conventional Heckscher-Ohlin factor proportions explanation for trade in mature products. Accordingly, as manufactured goods become more standardized and skill intensity decreases, the conventional major production factors —labour and capital— assume increasing importance in determining comparative advantages. Similarly, with regard to trade in primary products, comparative advantages are primarily determined by the natural resource endowment of the country.<sup>1</sup>

On the other hand, the product cycle approach introduces a dynamic element into trade theory. It offers a model for explaining and predicting changes over time in the composition and direction of trade. The theory shows why changes in the spatial division of labour are taking place and how the location of production is shifting between countries in different stages of economic development. New products are introduced in the technologically advanced countries. With mass production, technology becomes standardized and is diffused to intermediate countries, where capital has become more abundant and skills have been upgraded. Finally, countries in the early phase of industrialization concentrate on labour-intensive standard products.

Furthermore, the product cycle hypothesis may be used to shed light on development cycles in the industrial growth process itself. Hence, countries would be moving up from the early to the intermediate stage and subsequently to the advanced stage as industrialization proceeds, per

capita income rises and the demand pattern changes. Mature industries become less dynamic and less competitive, while new technology and skill-intensive industries emerge. These assumptions emphasize the need to make an explicit analysis of the industrial growth process itself before the factors behind comparative advantage can be explained.

### 3. *Industrial growth theories*

Historically, industrialization has by no means been a single uninterrupted, unitary, nation-wide, nor even a world-wide process. On the contrary, different industries have developed unevenly in time and space. Nevertheless, despite this divergence in timing, industrialization is frequently considered to be an identifiable uniform process of growth and change whose main features are historically the same in all countries. Furthermore, just because of this divergence in timing, the uneven geographical distribution of industrial activities has paved the way for a spatial division of labour and induced the consequent trade relations.

Conventional industrial growth theories are based on the implicit assumption that there is a standard global pattern of industrial growth, progressing from one stage to another with homogeneous industrial structures and income levels. Following the pioneering work of Simon Kuznets (1959, 1971), who summarized this process in the term "modern economic growth", several economists and particularly economic historians have attempted to quantify the rate of structural and sectoral change inherent in the industrial growth process. Kuznets was particularly interested in investigating the relationship between levels of income and industrial output. Per capita income became the most important and universally applicable single measure to indicate the level of economic development. Historical studies have also shown considerable uniformity in the rise of manufacturing industry as growth proceeds. The possibility of a regular pattern of industrialization has been analysed by measuring the distribution of the national product and the labour force between major sectors as well as within the industrial sector.

Colin Clark (1940) introduced the division of each economy into three major sectors: primary

<sup>1</sup>Finger (1975) and Hirsch (1975) highlight the usefulness of the product cycle theory and the Heckscher-Ohlin theorem for explaining international trade patterns.



(agriculture and extractive industries), secondary (manufacturing and construction) and tertiary (services and trade). Accordingly, the main identifiable feature of modern economic development is the shift from primary production, through manufacturing, to tertiary industry. The three-sector model has been applied to all countries—irrespective of their size, level of development or structural features—and has indicated each country's location on the same universal growth line. Hence, economic development means the advance of national units along a single route, in which rapid industrialization is considered to be the main characteristic of progress. This type of conceptualization is common to general linear, "stage" models of development, of which the most influential representative has been W. W. Rostow (1960), with his "stages of growth" theory.

As the industrialization process proceeds, the structural transformation of the economy is no longer manifested in quantitative terms by the share of industry in production as a whole, but rather by sectoral shifts within industry. The product cycle hypothesis predicted that within manufacturing a general tendency is emerging in which mature and technologically simpler industries requiring primarily unskilled manpower lag behind, while R & D and skill-intensive industries are on the increase, as income levels rise. The first systematic study of how the sectoral pattern of manufacturing industry actually varies according to the level of development was made by W.G. Hoffmann (1958). He divided the industrial sector into consumer and capital goods and concluded that each country passes through four stages in its development, each showing a higher ratio of capital goods to consumer goods than the previous one. Hence, a single figure representing this ratio locates a country along the universal industrial growth path. Only the speed of passing through each phase may vary according to natural endowment or other factors, but otherwise countries experience similar patterns of industrialization.

A more sophisticated investigation with analogous assumptions has been represented by Hollis Chenery (1960) and Chenery and Taylor (1968). He criticized Hoffmann's choice of industries for being arbitrarily limited and for omitting several important sectors, and instead

he classified industrial sectors into three categories: capital goods, intermediate goods and consumer goods. The industrial growth patterns Chenery described were measured in terms of the income elasticity of growth. The lowest growth elasticities are mainly in consumer goods, while the highest are in capital goods and the principal intermediate goods used to produce them. Hence, Chenery came to the conclusion—similar to that of W. Hoffmann—that there is a strong connection between industrial development and the lead taken by capital and some intermediate goods industries over the consumer goods industries.

Exportable natural resources provide the principal basis for international specialization in pre-industrial economies. Correspondingly, in the very early stage of industrialization, resource endowment (including an abundance of labour) tends to be more important than other factors of production in determining the initial structure of comparative advantages. As industrialization proceeds towards the "transition" or "take-off" stage, relative endowments of physical resources (geographic conditions, area, population and raw materials) lose their significance, and differences in the capacities to use physical resources (the quality of the labour force, technology, capital, organizational structures) begin to have primary influence on the pattern of industrial growth.

The pattern of the international division of labour changes accordingly; there is a shift away from vertical trade—exchange of primary products for manufactures—towards horizontal trade—exchange of manufactures for manufactures. This underlines inter-country differences in specialization within the manufacturing sector. Here the contribution of industrial growth theories plays a role. These theories have attempted to investigate which products in the course of development of an economy are the first to be manufactured and which follow later and in which order. Taking into account country variations in levels of development and in the respective factor endowments, an optimal pattern for the international division of labour may be constructed on this basis.

Industrial growth theories offer a "stages approach" to the comparative advantage theorem. The pattern of international specialization

thus constructed suggests that less developed economies, being as they are in the early stage of industrialization, have a natural advantage in the production and export of mature, low-skill, resource-based and/or labour-intensive goods. The role of intermediate countries would be to concentrate on standardized industries with a relatively high capital-intensity, while the major prospects of advanced industrialized economies lie in technologically sophisticated goods with a high skill-intensity and a high value-added content. This type of international specialization pattern would be beneficial for all countries concerned. To achieve this, the "market principle" must be allowed to function without intervention.

There are, however, some problems related to the universal applicability of industrial growth theories and of the stages approach to comparative advantage. First, the industrialization process has obviously had certain common features both historically and spatially. Nevertheless, there is a major reason why patterns of industrial growth in less advanced countries may be expected to deviate from the observed historical patterns in already industrialized countries: namely, the very existence of the latter countries, whose earlier industrialization has substantially changed the external environment faced by later industrializes.

The economic historian A. Gerschenkron (1962) has formulated the thesis that the more backward a country is at the beginning of its industrialization process, the more likely it is to follow a different development path from that of its forerunners. The relative backwardness is explained by the absence of one or more of the required production factors, for which the country concerned has to "substitute" various alternatives. The path of the latecomers has therefore not been identical with that of the pioneering countries or even with other late industrializes: substitution has created different paths.

Secondly, and more importantly, different patterns of specialization have different long-run consequences for economic development. There are items which can rather easily be substituted or traded and others whose presence is vital for the overall industrialization process. Hence, the difference between marginal and fundamental trade should be brought into the analysis. Furthermore, structural differences between economies may lead to asymmetrical exchange relations and domination of a weaker partner by a stronger one, which thus may undermine the possibility of mutual gains from international specialization and trade. These types of problems are brought out by the structuralist approach to international economic relations.

### III

#### Theories opposing the idea of specialization based on comparative advantages

The trade and industrial growth theories presented in the previous sections have a common feature: they aim both to explain and to explore desirable patterns of the international division of labour, primarily in terms of the relative factor endowments and the respective comparative advantages. Depending on the approach, the location of production and the consequent trade flows are determined by specific resource requirements, by the relative availability of labour and capital, or by the availability of

human capital, including technological know-how. In addition, the availability of these production factors is determined by the stage of the industrialization process in each country.

There are, however, difficulties in using factor endowment as an independent and sole explanation of trade and specialization patterns. Furthermore, even more problematic is the conclusion that the predicted pattern of production and trade would be the optimal mix in the inter-industry allocation of resources between coun-

tries. Both the positive (determination of the pattern of trade) and the normative (gains derived from trade) propositions inherent in the factor proportions approaches are frequently criticized.

1. *The structuralist critique of the factor proportions approach*

According to the structuralist view, the international division of labour is primarily a function of relations rather than a function of scarcity. An empirical investigation of the international division of labour might confirm that what is abundant in the developed countries (skilled labour, capital, technology, know-how, etc.) is truly scarce in the less developed ones, and that this divergence is manifested in the respective specialization patterns. Nevertheless, the controversial elements in this concept are due less to the basic empirical phenomenon than to its causes. For structural analysis, the examination of national capabilities alone is not satisfactory. It focuses on the relationships between actors and emphasizes that the nature of the interaction has a strong influence on the observed differences in factor endowment as well as in levels of general development.

It is commonly accepted that differences in the availability of production factors affect the patterns of international trade and production. But structuralists seek to elaborate a theory of dynamic comparative advantages by stressing that the role of production factors cannot be abstracted from the overall social and economic development and external relations of a country (Helleimer, 1981 and Kiss, 1971). Factor endowment is not fixed, but is itself a product of socio-economic development, including past and present trade relations, international movements of capital and labour, as well as policy intervention. Hence, factor endowment cannot be taken as a given quantity, but must be regarded as one of the variables which may and have been affected by policy. For example, the different continental and country-specific combinations of production factors in developing countries today result from the historically coerced incorporation of these societies into the international colonial division of labour. Similarly, a country may be able to gear itself up to be

internationally competitive in industries in which it might not appear to have an inherent comparative advantage in static terms.

Furthermore, factor endowment only partially explains the current pattern of the international division of labour. The volume and pattern of trade also depend very significantly upon other elements such as marketing efforts and economies of scale, as well as upon international market concentration and intra-firm trade relations. Moreover, a crucial role is played by various institutional factors such as existing tariff and non-tariff barriers, trade preferences, special promotion measures, and State trading, including bilateral and barter trade arrangements. The comparative advantage approach—even with qualifications—thus does not provide an adequate explanation of the trade that does in fact take place. Analogously, it would be unadvisable to use the present factor endowment as the sole basis for trade policy recommendations.

The advocates of the comparative advantage theorem would, however, argue that from the point of view of the efficient world division of labour it represents a desirable rather than an actual pattern of specialization. If restrictive trade policies do inhibit an optimal division of labour, the required solution is to reject not the theory, but the distorting policies. In other words, the comparative advantage principle may be inadequate in "positive" terms to explain what actually takes place, but it still persists in a "normative" sense as proof of the advantages that can be derived from specialization and free trade.

The argument for international specialization put forward under the comparative advantage principle centres on the comparison of a trading situation with a non-trade situation. Each country would gain from trade by specializing in what it is relatively efficient at and exchanging these goods for what it is relatively inefficient at. No country will be adversely affected by trade, since each will attain at least the level of well-being that it would reach without external transactions. Hence, opening up a country to foreign trade is the best way to make use of the benefits of international specialization according to that country's comparative advantages.

That there is an aggregate benefit from specialization is incontrovertible. But the major question is: How is it shared and what are the long-term cumulative effects of a particular pattern of specialization? In a purely static sense, arrangements restricting specialization and foreign trade reduce the income and welfare of the world as a whole. But the classical argument that optimum allocation of resources is secured by free trade has not indicated the distribution of world welfare and income.

Depending on the nature of exchange and the structural conditions between trading partners, the benefits from trade may be distributed quite unevenly. This is the case, in particular, between countries with very large differences in production structure and level of development—the typical exchange situation between advanced industrial and less developed countries. Here the complementary nature of the trade relation does not need special explanation, but its advantageousness, on the other hand, is problematic. In this context, structural analysis is questioning not so much the composition of trade suggested by the comparative advantage principle, but the predicted consequences of such trade.

The factor proportions models are typically built up on a cross-sectional type of static account, whereas the international division of labour, according to the structuralist view, results from a historical process with differential, long-term, dynamic and stagnating effects for the participants. The question is what specific impact would be exerted on the production structure, overall industrial development, income distribution and consumption profiles by different types of specialization patterns. All participants may benefit from international trade and specialization provided their initial situations are fairly symmetrical. The problem arises in the case where the trading partners have unequal initial levels. If this question is raised, the fundamental difference between trading structures of a symmetrical and an asymmetrical nature becomes evident.

## 2. *The case for protection*

The German economist Friedrich List (1977) was the first who systematically challenged

—more than 140 years ago—the theory of classical English economics about the immediate advantages obtainable through the international division of labour and trade. List's concern was not to make a critical refinement of the comparative advantage and free trade principles as such, but rather to secure their applicability to all economies, especially with regard to those having a lower level of industrial development than the British economy, whose productivity surpassed that of all others at that time.

List considered the international economy to be hierarchical in structure, consisting of three tiers of countries. Great Britain was at the top of this hierarchy with an advanced industrial structure, thus putting ruinous competitive pressure on less advanced economies still in the initial phase of the industrialization process. On the second tier, List placed those countries which he assumed to be capable of attaining a degree of industrial maturity comparable to that of Great Britain, provided they applied appropriate economic and foreign trade policies to offset the negative influence of the British economy. Among these second-tier countries he included the United States, France and, in particular, Germany. On the third tier were the countries of the so-called torrid zones—corresponding to the Third World—which for natural, and especially climatic, reasons were incapable of generating a proper industrialization process. Their role in the international division of labour would be to remain producers of agricultural goods and raw materials and they would benefit from free trade.

List's criticism of the global free trade doctrine was particularly based on his concern for the fate of the second-tier countries. He emphasized that the comparative advantage principle has validity in the short run: every participant in trade gains by specialization. The long-run consequences of asymmetrical trade relations, however, would be the further development of the productive power of the pioneering and advanced countries, while the development potential of the industrial latecomers would be restricted. Hence, the latter must protect their nascent industries from the competition of more developed economies, while still maintaining free imports of raw materials.

List gave priority to the comprehensive generation of domestic productive forces, i.e., "pro-

duction of productive power", knowing that the introduction of protective tariffs, for instance, would cause the loss of the apparent, immediate advantages. To buy manufactures from abroad is usually far less expensive than to develop the pre-conditions for producing such goods locally. There would, however, be a problematic trade-off: the more an initially inferior economy buys from abroad, the more domestic manufacturing development is inhibited. Successful industrialization has depended not just on imports of advanced technology and capital goods, but also on the acquisition of the ability to generate technical progress and to produce the countries' own tools and equipment.

List introduced the famous infant industry argument for protection. This has been traditionally considered among free traders as one of the most acceptable justifications for interference in free trade. The argument is that in a free trade situation a country may never have a chance to develop the production and export of certain products in which it has a potential comparative advantage, because established foreign producers have an early start. Thus, the infant industry argument claims that in the long run the world as a whole will benefit from a selective temporary tariff. Logically, the argument implies an eventual phasing out of the degree of protection as the basis of industry is consolidated.

There are several other arguments opposing the free trade doctrine and the consequent international specialization pattern. The implicit cost/benefit calculation of the free traders is questioned by stressing the hidden social costs of international competition and internal reallocation of resources. There is a trade-off between economic growth and rising incomes through free trade, on the one hand, and internal economic integration and social security through protection, on the other. Hence, protection is frequently favoured in order to secure balanced income distribution within a country, to maintain full employment and a diversified industrial structure, to improve a country's terms of trade and balance of payments, or to safeguard some strategic sectors. It may be that the world as a whole is worse off as the result of such protection, but the country concerned aims to improve its own welfare position and to safeguard a more

equal distribution of gains from trade. Protection is thus considered to be a tool of structural policy having the same function as an active industrial and technology policy designed to support national industries against international competition.

### 3. *Structuralist theories*

The basic structure of the international economy which Friedrich List analysed still has similar features today, although the disparities within the world economy have become far more accentuated in the meantime. List analysed the development constraints of "second-tier" countries, whereas the structuralists—such as R. Prebisch, H. Singer, G. Myrdal, A. Hirschman, R. Nurkse, A. Lewis and F. Perroux—have primarily examined the effects of trade and specialization in "third-tier" countries and at a regional level within advanced economies. They have questioned the principle of specialization on the basis of static comparative advantages, which assumes that specialization is beneficial to all participants. The doubts have been particularly accentuated in asymmetrically structured relationships, such as those between less developed and highly industrialized economies. The possibility of an unequal international division of labour has been introduced, the central concept being the "core-periphery" imbalance. Furthermore, the tendency of international trade to reproduce spatial inequalities has been emphasized.

The structuralists have shown that the existing international pattern of specialization and trade is of much greater benefit to the core (where manufacturing production is concentrated) than to the periphery (which is destined to produce primary products). They have expressed the view that the benefits of international exchanges are different depending on the nature of the products traded. The existing division of labour is an obstacle to the economic development of the periphery, as was primarily demonstrated by H. Singer (1950) and R. Prebisch (1949).

They argue that one-sided specialization in primary products has made the peripheral economy very vulnerable to external cyclical fluctuations, the purchasing power of its exports is declining, it lacks the secondary and cumulative

effects of manufacturing production, and it has less scope for technical progress and productivity increases. As a consequence, there arise the problems endemic to a peripheral economy: a chronic trade deficit, increasing external indebtedness, price instability, low relative wage levels, structural unemployment, and frequently emigration.

While the main thrust of the Prebisch-Singer thesis focuses on the undiversified composition of the primary producers' trade, it could also be applied to the international division of industrial labour. One-sided industrialization without an internally integrated vital production structure may be very unfavourable as, for example, the Canadian staple theorists (Innis, 1938 and MacKintosh, 1939) have indicated by the concept of "staple traps". Concentration on exports of standardized resource-based products or on unskilled labour-intensive manufactures may create a vulnerable lopsided economic structure with few inter-industry linkages which is sensitive to business cycles and to the changes in technology and the tastes of core areas. These products also typically have a low income elasticity of demand, and thus the terms of trade tend to deteriorate in the long run.

Consequently, what is needed is a production structure with a wide variety of industries which would support each other on both the demand and the supply sides. Following this argument, several economists such as P. Rosenstein-Rodan (1943), R. Nurkse (1953) and A. Lewis (1955) have elaborated a strategy of "balanced growth", by which is meant simultaneous expansion of a number of manufacturing sectors and amplification of the size of the domestic market. The aim is to set off a general chain-reaction within an economy through the internal horizontal and vertical interdependence of industries.

The feasibility of a balanced growth strategy—particularly in small peripheral economies—has been questioned, however, by several authors, notably by A. Hirschman (1958) and F. Perroux (1955). Where are the resources for investments supposed to come from? How can the required administrative capacity be obtained? What is the optimal combination of industrial sectors and in what size of economy? Consequently, assuming fixed investment resources and limited administrative as well as

entrepreneurial capacity, the optimal pattern of investment would be one which concentrated first on one sector and then on another, with a balance being approached only in the long run. Thus, A. Hirschman proposed "unbalanced growth" and F. Perroux a "growth pole" as an alternative to the balanced growth strategy.

As far as industrialization in less developed economies is concerned, the normative implications of the static comparative advantage principle suggest specialization in exports of standardized labour-intensive or resource-based manufactures and imports of skill-intensive technologically sophisticated goods. This proposed division of labour would, however, petrify the existing disparities in the world economy between more developed and less developed economies according to both the balanced growth and the unbalanced growth models, since it does not provide the dynamic impetus for an internally coherent industrialization process in the latter economies. The peripheral economy may find itself locked into a stagnant situation which perpetuates its comparative advantage in the respective labour-intensive or resource-based production activities. This in turn will inhibit the domestic growth of the required physical and human capital as well as technical skills, particularly since the economy is surrounded by advanced industrial economies, which are capable of and highly competitive in supplying all the essentials needed. A cumulative process is therefore set in motion in which trade exacerbates the already unequal trading relationships.

G. Myrdal (1957) and A. Hirschman (1958) introduced the concepts of "backwash effects" and "polarization effects" to illustrate the spatial consequences of unbalanced growth generated by free trade in asymmetrically structured relationships. In contrast to "backwash effects", there are also "spread effects" or "trickling-down effects" of expansion from core areas to peripheral areas. As G. Myrdal stresses, though, the outcome is spatially unbalanced growth—a process of structural enrichment (in cores) and structural impoverishment (in peripheries)—if market forces alone are left to decide the allocation of resources. Hence, the role of the State—particularly in peripheral economies—is cru-

cial in offsetting trends towards disequilibrium and creating the basis for a viable economy.

#### 4. *The dependency approach*

The core-periphery conceptualization used by the structuralist theorists expresses an unequal relationship between different economies: the core countries benefit from international trade, whereas the peripheries suffer, and thus the world economy is characterized by uneven development. The dependency school, on the other hand, has gone one step further—a step already indicated by G. Myrdal—by arguing that the concepts of core and periphery involve more than a simple idea of initial differentiation and the consequent external constraints; it is maintained that they gradually took shape due to the same historical process of expansion via the "backwash effects" of the core economies. Hence, the problems of peripheral economies are interpreted not as features of the development process of late industrializers conditioned by an advanced external environment, but as the consequence of integration into an unequal international division of labour, which has been dominated by the capitalistic core economies. The unity of the international economic system is thus stressed.

The core is viewed as capable of self-expansive development and as the main beneficiary of the global interactions. On the other hand, the periphery is seen as having a reflex type of development: one which is both constrained by its incorporation into the global system and which results from its adaptation to the requirements of the expansion of the core. The core has specialized in advanced manufacturing supported by the peripheral areas, which are providing the necessary primary goods as well as auxiliary markets. The core accumulates capital at the expense of the periphery. The world system is considered as interdependent, but with a specific asymmetry in which different units perform different functions with different socioeconomic consequences.

The history of the periphery is an integral part of the history of the core, both of them reflecting different aspects of the same universal process. Hence, structural features in the periphery cannot be considered as an original

condition in an evolutionary process, but must be considered as a created condition influenced, in particular, by external factors. The central argument of the dependency school has been that dependence—manifested in the unequal international division of labour and in the distorted internal production structure—generates underdevelopment in the periphery.

Criticism of the dependency approach has to a large extent been focused on its overemphasis on external factors as well as on its use as a "theory of underdevelopment". Particularly in the earlier writings of A. Frank (1967, 1969), the notions of external conditions mechanically determining internal ones and development being incompatible with dependence were explicitly proposed. Nevertheless, most authors of the dependency school emphasize the interactions between external and internal factors, although the former are considered to be dominant. Analogously, the possibility of capitalist development and industrial growth in the periphery is acknowledged by most "dependen-tistas", but its specific structural features are stressed. These elements are expressed in the well-known formal definition of dependence made by Theotonio Dos Santos (1977). The key element of his concept of dependence is the lack of opportunities for autonomous and self-reliant development in a peripheral economy. He has also, however, emphasized the interaction between external and internal factors by saying that the accumulation process of dependent countries is conditioned by the position they occupy in the world economy but determined by their own laws of internal development. The result will, nevertheless, be a dependent economy, unable to break the chains binding it to the metropolitan cores and achieve its full development.

A similar type of definition of dependence has been made by F. H. Cardoso (1973) and Faletto (1974), who refer to the lack of internal capacity to generate new technology, to launch new products, to produce capital goods and to create markets. However, the economic and social structures are changing in the periphery. Rapid economic growth could even take place together with industrialization, though generated by external forces. In this context Cardoso makes an important distinction between depen-

dependency in enclave situations and dependency where the production system is nationally controlled. In the former, foreign capital dominates the economy, which, by its functions, is directly related to global capital accumulation. In the latter, however, since natural resources and production activities are controlled locally, the accumulation of capital is internally initiated, though requiring international markets for its realization. The system is not self-expansive nor self-reliant, and its dynamics are externally determined. Cardoso calls this "dependent development".

According to the dependency approach, in order to build up a viable self-reliant economy in the periphery, a necessary condition is the generation of a comprehensive industrialization process. But this process cannot be expected to take place spontaneously, for it would be inhibited by the existing international division of labour, which tends to petrify the differences between core and peripheral economies. Within this division of labour, the core economies may constitute a veritable "engine of growth" for the periphery, but in the latter the expansion of the world economy will lead to a lopsided pattern of development. To escape from this dependence, a selective dissociation of the peripheral economies from the world market is necessary (Senghaas, 1978; Diaz-Alejandro, 1978; Galtung and others, 1980).

Nevertheless, in several "dependent economies" it has been the development of export sectors that are resource-based or intensive in unskilled labour that has laid the groundwork for the structural transformation of industry. The question, therefore, is not whether exports of primary products or simple manufactures in themselves lead to unfavourable external interactions, but rather whether the countries become trapped in the role of exporter of primary or semi-processed goods in the international division of labour, or else are able to progress from there to build up a viable economic structure.

The ability to respond successfully to the competition of already industrialized core economies and to build up a developed industrial structure is, naturally, a result of the complex interaction of a number of factors. The wealth of a country's factor endowment, its communications network, its chances of domestic capital

accumulation instead of direct foreign control of production, the capability to accelerate the domestic acquisition of technological capacities, the national generation of linkages and external economies, and, last but not least, government policy are all decisive factors in paving the way for successful industrialization and for restructuring the pattern of the international division of labour. The role of State intervention is particularly important both in the formulation of economic policies oriented towards these ends and as a direct productive agent.

Altogether, the dependency approach stresses that the nature of the industrialization process and the consequent pattern of international specialization is determined not by static comparative advantages, but by dynamic ones. It thus seeks to incorporate into the analysis the overall socio-economic environment, including asymmetrical relationships and the unequal distribution of gains from trade, which lead to pressures for change.

### 5. *A global system: core, periphery and semi-periphery*

The core-periphery metaphor has been applied by both structuralists and dependency theorists when describing development disparities in the world economy. This pair of opposites is not defined by geographical or geometrical distances or by specific internal properties alone, but by the nature of the interaction between these two poles. There is a distinct differentiation between the functions of the two poles in the context of the world economy, which is primarily manifested in the vertical international division of labour. Integration is vertical when it takes place across a gap in processing levels, and the consequence of this is that a high level of processing generates economic linkages and external economies (i.e., integrated industrial structures) for the core areas, while denying them in the peripheral economies.

Underlying this differentiation of functions, there is a basic diversity of structures: in the core the production structure is diversified and homogeneous, whereas in the periphery, in contrast, it is specialized and heterogeneous. Diversity implies an economy with a variety of industrial sectors, and homogeneity means that these sec-



tors have mutual linkages leading to structural cohesiveness. The consumption profiles match the complexity of the production facilities and technology. An advanced form of production has numerous positive secondary effects within the economy.

In the periphery, in contrast, the economy is highly specialized, having unilaterally developed an "enclave" type of export sector with limited internal backward and forward linkage effects, while demand is largely met with imports as it increases and becomes more diversified. On the other hand, the economy is heterogeneous, or fragmented, and characterized by the absence of vertically integrated industrial structures, i.e., the lack of complete production chains. In particular, the production of technology and equipment takes place abroad, and frequently the export products have low value-added contents. This structure is, furthermore, heterogeneous in the sense that economic activities with significant differences in productivity exist side by side, the two extremes being represented by an export sector with high productivity due to imported technology and capital goods, and subsistence agriculture using outdated technologies and thus having a very low level of labour productivity.

Both types of economies —although described as separate poles— are structurally linked so that the system reproduces itself at the global level. This is the starting point of Samir Amin's analysis of the global accumulation of capital, which creates peripheral capitalism with specific structural features. According to Amin (1974, 1976), there are three criteria which define the periphery: unevenness in productivity between sectors, its disjointed economic system, and domination from outside. He has particularly stressed that the presence or the absence of links between different economic sectors explains why some countries are developed and others underdeveloped. The core economies —particularly the small countries among them— are not necessarily economically self-sufficient either, but they are self-reliant, since they have integrated industrial structures. For Amin, the determining interrelation in a self-reliant system is that which links the sector producing mass-consumption goods with the sector producing capital goods. In peripheral economies this link is absent, primarily due to the lack of a capital goods sector.

The role of capital goods production is particularly accentuated in this determination. It is the foundation of the industrial structure and of the international competitiveness of an economy. The capital goods industry is the principal vehicle of technical progress, which in turn has a direct impact on labour productivity and investment. Likewise, it sustains autonomous industrial development, since it generates the equipment necessary to install other sectors of production. As long as capital goods production is lacking in a peripheral economy, the potential dynamism derived from internal economic expansion and investments will pass to the core countries, and the world economy will be characterized by unequal specialization.

Immanuel Wallerstein (1979) has further developed Samir Amin's analysis in his so-called world-system approach (see also Hopkins and Wallerstein, 1980). According to this, on a global scale the process of the division of labour has created an integrated and polarized world economy manifested in core-periphery relations. A world system, according to Wallerstein, "is a unit with a single division of labour comprising multiple cultural systems, multiple political entities and even different modes of surplus appropriation". Wallerstein describes the world system as being capitalistic and argues that once capitalism emerged in the sixteenth century, regional specialization and the worldwide division of labour developed. Before that, the world was made up of a number of relatively independent "mini-systems". As these "external areas" became subjected to the world system's expansion, i.e., were incorporated in the process of the global accumulation of capital (in Amin's terminology), they were "peripheralized" and lost their autonomous development potential.

The particular pattern of integration of production that is frequently noted on a world scale —primary products from the periphery, manufactures from the core— is incidental, not essential, to the concept of a core-periphery division of labour. It is primarily a division among integrated production processes, not among particular products. Typically, the poor internal integration in the peripheral economies is manifested in production that is both externally oriented and highly specialized in semi-processed goods with low skill-intensity.

The world system is in a constant process of change in which its various poles manifest themselves differently. The polarization between the core and periphery does not, however, produce a bi-modal but rather a tri-modal distribution of countries over the core-periphery spectrum.

Thus, in addition to the core and periphery, there is in the middle a structurally distinguishable group of countries which make up the semi-periphery. Accordingly, the following typology may be constructed categorizing countries according to their role in the international division of labour.

| Horizontal division of labour                |                              |
|--|------------------------------|
| homogeneous/<br>integrated                   | heterogeneous/<br>fragmented |
| subsistence<br>economy<br>'external<br>area' | periphery                    |
| core   | semi-<br>periphery           |

The basic difference in development dynamics between core and peripheral and semi-peripheral economies is that the core is viewed as capable of self-generating development responsive to internal needs, while the other two have a reflex type of development with fragmented, specialized production structures. The fourth category, "external area" or "mini-systems", which has not yet been affected by core penetration and thus has a self-contained internal division of labour, does not exist any longer in the world. In the periphery the structure of production is specialized in a double sense: only primary products are exported and the economy is internally poorly integrated. In the semi-periphery, for its part, although some manufactures are exported, the export production is also highly specialized, having only a few linkages within the national economy.

The concept of the semi-periphery does not comprise a stable category of countries, although its international function may have been histori-

cally quite the same. In their role in the global division of labour, the semi-peripheral economies face a dichotomy: they have two different sets of "comparative advantages", one characteristic of the core countries, to whose status they aspire, and one typical of the peripheral economies, whose status they seek to leave behind them. Hence, they exchange different kinds of products with each of these types of countries, importing advanced technology from the core and exporting semi-processed goods back to them, while obtaining raw materials from the periphery and exporting finished manufactures there. In part, the semi-peripheral countries act as a peripheral zone for core areas, but as a core for some peripheral areas.

The international system is frequently described as comprising a three-tier hierarchy in which the intermediate stage has been called "second tier" (F. List), "sub-imperialism" (R.M. Marini), "dependent development" (F.H. Cardoso) or "semi-periphery" (I. Wallerstein). All these international stratification models are empirically rather loose and lack unambiguous operational criteria for identifying the countries belonging to each category. Clear quantitative measures of the cut-off points that demarcate the semi-periphery from the core at one end and the periphery at the other have not yet been established. Some empirical efforts have, however, been made based either on capacity factors (size, industrial development, income level, military strength) or on transaction data (trade flows, diplomatic exchange, military interventions). Whatever criterion of semi-peripherality one is using, the result has been a heterogeneous group of countries.

It is necessary to emphasize that the international economic system should be seen in terms of a pyramidal structure of socio-economic hegemony and dependency—a scale—rather than unique categories of core, periphery and semi-periphery. Hence, the concept of semi-periphery may be used primarily as a tool of analysis, rather than as a detailed categorization of countries belonging to it. Core, periphery and semi-periphery are all concepts in terms of which only relative rather than absolute statements are plausible.

## IV

## Towards the determination of an international division of industrial labour

The relative shares of primary products and manufactured goods in a country's foreign trade have traditionally been used as the main indicator defining its position in the international division of labour. However, a clear demarcation between raw material producers and exporters of manufactures is gradually becoming rarer and rarer in the world economy. Traditional international trade patterns are being replaced by new trends. Developing countries are increasingly processing their raw materials and diversifying their production of substitutes for a wide range of previously imported industrial goods. Thus, the traditional complementary trade is being substituted by more competitive trade relations in which countries exchange manufactures for manufactures. The complementarity in trade relations is, in fact, manifested at a new level. In the world economy a new type of productive specialization has been accentuated, in which a country's relative position is defined in terms of its role in the international division of *industrial* labour.

When comparing industrial structures and the consequent trade patterns within the core-periphery spectrum, there are five distinctive features which characterize the depth and scope of industrialization, and hence each country's external competitive position. These are the degree of *external orientation* and the *diversity* of the industrial structure, the *partner concentration of trade*, and the *skill-intensity* and *value-added level* of industrial production.

Typically, a late-coming, peripheral industrializer is greatly dependent on external relations both in terms of markets and supplies of inputs. Furthermore, the exports are focused on a few industrial products, as well as usually being highly concentrated in terms of partners. These features are interrelated, since the dependence upon external forces is likely to be greater if foreign trade is characterized by high geographic and commodity concentration. A common explanation for these features is the beginner's

initial scarcity of industrial resources and of effective internal demand, as well as the overall competitive weakness of industry *vis-a-vis* the more advanced external industrial and technical environment. These defects create a sort of vicious circle, since the fragmented, enclave-like export production has only a few inter-industrial linkages, and hence the economy does not benefit enough from potential multiplier effects, which instead tend to leak abroad. Domestic demand is supplied by imports on too large a scale, the trade being particularly concentrated with the dominant core economies.

The external orientation, low level of diversity and highly specialized export structure are partly related to the size of the economy. There is an inverse relation between country size and both trade dependence and trade concentration. A relatively small domestic market has made small countries —irrespective of their level of development— dependent on specializing and exporting in order to exploit the benefits from economies of scale. In contrast, the large countries can rely far more on internal markets and volumes of domestic resources in their industrialization process. But these obvious observations do not reveal the possible variety of specialization or the problems of concentration on specific branches.

Different patterns of specialization have different long-run consequences for economic development, and should thus be brought into the analysis. It is not primarily the scope, but the depth of industrialization that matters. Small advanced industrialized countries may well be highly specialized in their export production, but it is typically concentrated on technically advanced, skill-intensive products with a high value-added content. This specialized production is vertically integrated within the national economy, which has strong backward and forward linkages, and it consequently has various multiplicative impacts on overall economic development. Sectoral specialization may thus

accelerate the process of comprehensive industrialization, provided a vertically integrated industrial structure is created. For example, the strategic role of steel in industrial development is based on this kind of series of linkages: from ore mining through smelting and refining to fabrication of metal products and, finally, capital goods.

The analysis presented above emphasizes the distinction between the division of labour based on sectoral specialization *vis-à-vis* functional specialization. Although the pattern of sectoral specialization is relevant, the spatial differentiation in terms of stages and kinds of production seems to be just as important for the investigation of the present international division of industrial labour, which is based not only on a sectoral geographical division but also on an intra-sectoral division of labour.

The argument might be made that the degree of processing and the skill-intensity of industrial production are more important factors than the relative external orientation or diversity, in determining each country's relative competitive position in world trade. According to these two criteria, the following fourfold typology of manufacturing branches may be constructed:

| Human capital intensity  |  |
|--|--|
| low skill/<br>standardized   | high skill/<br>innovative  |
| leather, wood,<br>textiles non-<br>metallic minerals,<br>pulp, paper,<br>iron and steel    | rubber,<br>chemicals   |
| furniture,<br>nothing footwear,<br>miscellaneous<br>basic metal,<br>transport<br>equipment | pharmaceuticals,<br>instruments,<br>industrial mach.<br>electrical mach. |

By and large, a country's specific role and position in the international division of industrial labour is determined by its pattern of specialization according to this type of categorization of industries. The industrial dominance and the competitiveness of core economies is based on the acquisition of the most sophisticated knowledge-intensive and technology-deepening industries, i.e., the "early stage" of the product cycle. Apart from requiring high skills, these industries are often relatively labour-intensive as well as having high value-added contents. Moreover, that type of "tailor-made" production is less sensitive to price competition, because the market emphasis is more on product quality and design. The most typical example is capital goods production.

In peripheral economies the dominant industries are mainly in mature, non-science-based sectors benefitting either from local natural resources or cheap labour. There the capacity to innovate and to lead technological development is limited. Design and production methods are standardized and productivity growth is slow. The major form of competition is price competition, depending predominantly on labour costs or natural resource availability.

Semi-peripheral economies are somewhere "in-between". They have striven toward more capital- and skill-intensive industries with a higher processing level than peripheral economies. Still the capital-goods sector, including research and the application of new productive techniques, continues to be dominated by the core economies. The specific competitive characteristics of a national economy are particularly dependent on the existence of indigenous investment goods production, because this determines the depth of the industrialization process in each country. The size of the capital goods sector may thus be considered as one of the major determinants in differentiating core and semi-peripheral economies from each other.

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